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The enclosed background information kit on Charles E. Frosst & Co., of Montreal, is for your files. Should you need further information and pictures about the Company, or views on aspects of the pharmaceutical industry in Canada, at any time, please contact us. Executives of Charles E. Frosst & Co. welcome enquiries and, whenever you have time, would be pleased to show you their modern plant, offices and research facilities at 350 Selby St., Montreal, Quebec.

EDITORIAL COMMUNICATIONS INC.

GENERAL DESCRIPTION OF COMPANY

Charles E. Frosst & Co. is the largest all-Canadian manufacturer of prescription medicines. Although it has been family controlled since founded in 1899, the company's stock has been listed on the Montreal and Toronto exchange since 1959.

From a modern, well-organized plant in Westmount, a suburb of Montreal, the company produces approximately 230 different products, ranging from such well-known pain relieving tablets as "217"'s and "222"'s to penicillin, hormone products, vitamins, sulpha and psychotherapeutic drugs. It also has a special department producing radio-active drugs and acts as a distributor in Canada of radio-active isotopes.

The buildings in Westmount include the home office, extensive laboratories and production facilities. The administrative offices, contained in a new wing, are of the most modern design and are fully air conditioned as is much of the plant.

The research and control laboratories take up more than an entire floor of the five storey building. They contain the latest scientific equipment to allow Frosst researchers to pioneer in the search for drugs on the forefronts of medical knowledge.

The climate controlled and other production areas contain modern equipment helping to assure quantity production to exacting standards.

The company has controlling interests in production and sales companies in Colombia, Peru and Lebanon. In other countries its products are sold through agents, or manufactured under licence.

The company was founded by the late Charles E. Frosst, in Montreal in 1899, and since then has been under the continuous control and management of members of the Frosst family. Today, Eliot S. Frosst, 64, is chairman; John B. Frosst, 62, president; Charles E. Frosst, 54, vice-president and secretary; and James E. Frosst, 37, executive vice-president.

With few employees when it was founded, the company now has a total staff of more than 500. Its products, too, have changed. In the early 1900's several hundred of its items were used by the retail druggist to compound prescriptions. Practically all compounding is now done by the manufacturer. Today the range of products covers analgesics, sulfonamides, antibiotics, vitamins and minerals, and other drugs for numerous therapeutic uses.

But the pace of medical research and development is so fast that there is a continuous flow of new products and, from time to time, older products are discontinued.

To maintain its position as the leading Canadian producer of ethical drugs, Charles E. Frosst & Co. supports a research and medical department with a staff of more than 40 highly qualified medical, pharmaceutical and other scientific specialists.

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Among the early products of the Frosst research department was the analgesic formula developed in 1910 for "217"'s which was followed a year later by one for "222"'s.

Today the department has fully equipped laboratories which are continually being expanded. Recently a new animal laboratory was brought into operation. In the course of a year the research department will scrutinize and study hundreds of products and compounds for therapeutic potential. At present much research is directed to developing new psychotherapeutic drugs, anti-cancer compounds and the improvement in hormone products.

Each year the company has increased its involvement in research and devoted larger sums of money to this activity.

In production, the company uses a self-imposed system of quality control, the standards of which go well beyond those required by Government regulations. This stringent control operates from the moment the raw materials arrive at the plant until the final labels are put on bottles and packages.

In Canada products are promoted and sold from coast to coast by a field staff of over 80 highly trained representatives, most of whom are graduate pharmacists. This is one of the largest field sales forces in the drug industry in Canada.

These representatives call on physicians, pharmacists, dentists and hospital personnel. Sales are made to 6,000 customers, mainly retail druggists, through distributing warehouses in Montreal, Toronto and Calgary.

Increasing import restrictions by many countries have limited the growth of exports from Canada but the company has improved overseas sales by going into direct manufacturing, by licence to local companies and by selling through agents.

The company's total sales volume for the fiscal year ending May 31, 1962 was \$9,694,806. Dividends paid on class A and B shares during the year totalled \$344,955. or 65 cents a share. Net earnings were \$722,454. or \$1.36 per share.

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RESEARCH

Research is the life-blood of the pharmaceutical industry. A series of break-throughs in medical knowledge have created the possibility of cures for many of mankind's ailments, and spurred by competition, pharmaceutical companies vie with each other, first to find a cure and then constantly to improve upon it.

Frosst scientists, under Dr. J.M. Parker, Director of Research, conduct an unending search for drugs which are effective in areas where therapy is inadequate or unknown. More than an entire floor of the five-storey Frosst home office building is devoted to research laboratories, and additional laboratories have been built on the roof of the building.

Explains Dr. Parker: "A new drug is seldom the result of a flash of creative inspiration, it is normally found only after years of sifting and step-by-step testing." It has been estimated that the chances of a newly synthesized compound being marketed is about 3,000 to 1 ... and it takes 400 man-hours to synthesize and test a single new compound.

In the Chemical Laboratories at Frosst, groups of highly skilled scientists work with the most modern equipment in an attempt to find chemicals which can be used against cancer, new drugs which will work on the central nervous system, anti-inflammatory drugs and anticoagulants. Teams from this laboratory are available for trouble shooting should

chemical production problems arise.

The Pharmacology Laboratories contain groups working on pathology, bacteriology and toxicology. Here an exhaustive testing is given to new drugs to find out what good as well as what harm, if any, they might do. Frosst is frequently offered drugs from companies in other countries, but before it will consider manufacturing them, the company first passes the new drugs through its own pharmacological laboratories.

When effective new drugs are discovered, the forms in which they will be prescribed are worked out in the Pharmaceutical Laboratories. How to produce the injection, tablet, capsule, suspension, ointment or other form of pharmaceutical so that it will be active when administered, stable in storage and as palatable and pleasant tasting as possible? If the action of a single dose is to be prolonged in the body, these researchers develop the required formulation.

Finally, new drugs are passed over to the Medical Department, where one of the five other staff medical doctors arrange clinical trials in cooperation with hospitals.

Frosst has the only radio-active pharmaceutical laboratory in Canada. Radio-active drugs of rapidly changing potency are standardized daily and delivered by air across the country within hours of an order being received. Other compounds are synthesized with more stable radio-active isotopes.

The process of introducing a new prescription medicine may take up to ten years from the time that research is initiated. Considering the amount of time and money spent by Frosst on research and development, it is significant that the most it can hope for is less than one totally new product each year. Because of the giant strides being taken in medicine, these new products can expect a life of no more than five years before they are superseded by newer, more effective drugs.

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PRODUCTION AND PRODUCTS

Two million tablets a day can be made on machines in the Charles E. Frosst & Co.'s tablet production area. Tablets are made in batch sizes ranging from 50,000 to 1,000,000. Some of the machines work slowly, producing one tablet each cycle, while others, complexes of several high speed machines, can make a million tablets of one kind in a day.

The higher-speed machines, requiring heavy capital outlay, have only been in use in recent years. Originally tablets were made entirely by hand. After the given dose of ingredients had been placed in a die they were compressed by a man striking a punch with a heavy blow from a hammer. The next development was a machine which made one tablet at each cycle.

Today the ingredients, after being processed according to Frosst specified methods, are fed into the machines from huge drums and the tablets stamped out under pressure of many tons to the square inch, at speeds up to 1600 tablets per minute.

Not all tablets are produced at such high speeds. Some, specially coated, spend up to three weeks having layers of coatings put on them in pans where the temperature and humidity are carefully controlled. Control analyses are made and the physical qualities of the tablets checked during production. Tablets must be uniform in weight, disintegration rate and hardness.

Products administered by injection into the veins or muscles or under the skin, are made in a special sterilized area in which operators work under the same conditions as those used in hospital operating rooms.

Frosst injectables are made under the supervision of a qualified bacteriologist and must pass rigid chemical and sterility standards before being released for sale.

In another production area fluid medicines are manufactured. Here liquids, emulsions and suspensions are prepared in huge stainless steel tanks and then transferred by sanitary pipes to the bottling line.

Bottling, labelling and packaging are carried out in an air conditioned area and automated machinery is used as far as practical. Tablets are counted then placed in tubes which are capped, the tubes are labelled and inserted into cartons which are then sealed - all without being handled by operators. All mechanical operations are protected by devices which will detect and reject imperfect packages.

The layout of the Frosst plant is arranged for maximum efficiency and ease of handling both raw materials and finished products. From the time the raw materials are received until they go out as packaged products, they are moving downwards, from one floor to the next.

The production staff is headed by Frank Dance, Phm.B., plant manager. "To maintain standards", says Mr. Dance, "our production staff includes

four Pharmacists, one M.Sc., six B.Sc.'s, a bacteriologist and a chemical engineer. They keep the closest watch on all phases of production."

Products

Charles E. Frosst & Co.'s products can be divided into four general product groups:

Analgesics: The company is the largest producer in Canada of ethical products for the relief of pain. It originated the formulae used in the tablets known in Canada as "217" and "222". These formulae are now imitated in the majority of countries in the world under a variety of trade names.

Chemotherapy and antibiotics: These consist of sulfonamide preparations such as "Trulfa" and "Trulfa-Zine" and combinations of sulfa drugs with penicillin ("Trulfacillin"). Frosst also makes a range of products for the treatment of the more common bacterial infections. Prominent in this group are "Falapen" tablets (FAst and Long Acting PENicillin) which were developed as the result of work by Frosst chemical, pharmaceutical and pharmacological research teams.

Vitamins and Minerals: Since 1928, when the company became the first producer of synthetic vitamin D in Canada, it has developed a comprehensive group of vitamin and vitamin and mineral preparations suitable for various age groups. These include "Ostoco" for infants and

children. Chief vitamin preparations for adults are "Beforte" Tablets and "Tutamate" and "N.C.F." Tabsules.

Other preparations for Therapeutic use: Among other products are numerous trade-name preparations, many of which were originated in the company's laboratories. Some of the well-known names are: "Danilone", an anti-coagulant for oral administration; "Mequelon", a non-barbiturate hypnotic; "Propyl-Thyracil", for the pre-operative preparation of patients for thyroidectomy; "Flavedrin" and "Flavaco", for the relief of nasal congestion; "Colihist" for the relief of hay fever and other allergies; cough syrups "Dulsana", "Ipaphen", "Nusilyn", "Pinocodeine" and "Zephadon" drops; and products for the treatment of hyperacidity and gastric and duodenal ulcer, known as "Alamino" and "Restropin".

Altogether Charles E. Frosst & Co. makes and markets 230 different products in Canada and is expanding its lines steadily each year.

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QUALITY CONTROL

Behind each batch of drugs produced by Charles E. Frosst & Co. is an average of more than a hundred quality control and process checks, and in exceptional cases the figure runs much higher.

The standards set by the company go well beyond those required by Government regulation and ensure that each product manufactured is exactly what it is claimed to be.

The cost of quality control in the pharmaceutical industry is higher than in almost any other industry, as this control involves many highly qualified people and a constant series of time consuming checks and counter-checks.

Prominent in the Frosst quality control system is the Formula Card on which the progress of a particular batch of drugs is recorded from the time it begins as a group of raw materials until a series of labels, carefully counted, are glued to the bottles and they are packaged in cartons for shipment.

Chemicals come into the Receiving Department and a test sample is taken for checking by a qualified chemist from the Control Laboratory. Each lot of raw material is given a number which is used with each batch of manufactured product. This number allows any raw material to be traced back to the source of supply and to analytical records. The first step, in the Chemical Stock Room, is to weigh the ingredients

carefully. These weights can range from a few milligrams to half a ton.

From the Chemical Stock Room the ingredients go to the respective departments for processing.

As the batch of ingredients moves along, the Formula Card goes with it. Each step has to be checked, initialled and counter-initialled by operators and supervisors.

In the case of tablets, the mixed ingredients are fed into compressing machines, after the required sifting, mixing and granulating operations have been completed.

Even as the tablets pour out of the machines, operators take test samples checking them for weight and physical characteristics, and the Control Laboratory takes samples for assay at various stages of production. Some types of tablets need a much longer and more complicated manufacturing process than others. "Falapen" tablets which have several enteric and other types of coating over a penicillin core, take 23 days for the various layers of coating to be applied under closely controlled conditions of temperature and humidity.

It is the responsibility of the Control Laboratory to give final release for every batch of Frosst pharmaceuticals. After all analytical tests have been completed the Control Laboratory is equipped to carry out a wide range of biological, microbiological, chemical and

physical test procedures. Included in these operations are tests for potency, pyrogens and toxicity in the biological field; tests for sterility of injectables; potency of antibiotics and vitamins, using microbiological techniques; and assays for potency, identity and purity in the fields of chemistry and physics.

Such work requires a variety of elaborate instruments such as spectrophotometers, sensitive balances that will weigh to one-tenth of a milligram, and a wide range of electronic devices.

Quality control also extends to labelling and packaging. Each package bears a batch code which provides reference to the complete manufacturing record. Labels are carefully counted and the total used must match up with the number of actual packages produced.

"Charles E. Frosst & Co. has built up a high reputation in the ethical drug field" says president John B. Frosst. "One of the reasons is that our products have been found completely reliable due to the establishment and aggressive maintenance of our stringent quality controls."

EMPLOYEE AND COMMUNITY RELATIONS

An important factor in the growth of Charles E. Frosst & Co. and the development and maintenance of its quality standards during its 63 years, has been the excellent relations it has achieved among all employee groups.

This has been accomplished in many ways and the rate of employee turnover has remained remarkably low. Of 510 employees, 32 have 30 years service or more and another 169 have over 10 years service.

The group insurance plan was started in 1919 and today includes life insurance, accidental death and dismemberment insurance and comprehensive health insurance covering hospital and other medical benefits for all employees and their dependents. In 1931 a pension plan was started and it now covers all employees.

For a number of years the company has set aside a proportion of profits from which it pays semi-annual bonuses to all employees based on their yearly pay and length of service.

There is a plan to assist employees who wish to continue their formal education through evening study. A number of employees have obtained University Degrees under this plan.

Employees have their own Committees which operate a Credit Union, organized in 1937, an Employee Chest and a Recreation Association.

In 1961 the Employee Chest made grants totalling nearly \$5,000 to 38 charitable organizations. Employees join the Chest voluntarily, stipulating the amount of regular payroll deductions to be made. Administrative expenses of these organizations are met by the company.

Representatives of employees and management form a Suggestion Committee which makes cash awards for suggestions that do any of the following:

- save time or money
- improve product quality
- improve working conditions
- help employee relations

Through the training and development of supervisors and the introduction of new supervisory techniques the Company was able, two years ago, to eliminate the use of time clocks which recorded the start and end of each work period. Now there are no hourly-paid workers and everyone is paid on a salary basis. With the abolition of time clocks came a reduction of the working hours for plant employees from 40 a week to 37½ with no change in take-home pay. These moves have brought about increased efficiency.

The company takes an active part in community relations. Each year it awards six scholarships for the final year in pharmacy at universities across Canada and also gives research grants.

In addition to this the company participates in many organizations interested in the economic advancement of the country, and fulfills its responsibility as a corporate citizen by encouraging staff members

to serve on the executive committees of industry associations and eleemosynary organizations.

For manpower the company has a recruiting programme in cooperation with a number of Canadian universities. The majority of its pharmacists are recruited through these channels. The programme also operates in the United Kingdom and Europe.

Of a total establishment in Canada of 510 people, 152 are university trained:

Bachelors of Pharmacy	86
Bachelors of Science	24
Bachelors of Arts	7
Bachelors of Commerce	7
Masters Bus. Administration	2
Masters of Arts	1
Masters of Science	6
Ph. D.	8
M. D.	7
C. A.	2
Chemical Engineers	2

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CHARLES E. FROSST & CO. EXECUTIVES

Members of the Board of Directors of Charles E. Frosst & Co. who are also executives of the firm are:- Eliot S. Frosst, 64, Chairman of the Board since 1959. Joined the company in 1919. Vice-president, 1924, President, 1943.

John B. Frosst, 62, Ph.G., President since 1959. Joined the company in 1920. Secretary-Treasurer 1924. Vice-president 1943.

Charles E. Frosst, 54, Vice-president and Secretary since 1959. Joined the company in 1928. Secretary 1938, Secretary-Treasurer 1943.

James E. Frosst, 37, Executive Vice-president. Joined the company in 1947. Formerly Director of Sales and Marketing.

James M. Blanch, C.A., 50, Treasurer. Joined the Company in 1944 as Controller.

Douglas G. Currie, 63, Executive Assistant. Joined the Company in 1934. Formerly Controller.

Ezra Lozinski, M.D., M.Sc., F.C.I.C., 65, Medical Director. Joined the company in 1924.

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